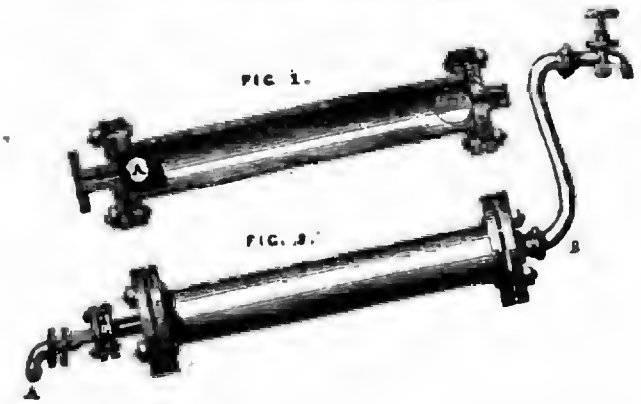
## WATER WASTE-PREVENTER.




### WATER WASTE-PREVENTER.

This arrangement is introduced for the purpose of detecting and preventing waste of water supplied to the inhabitants of towns by waterworks, whether such waste be wilful (as is too often the case amongst the occupiers of cottage property), negligent, or accidental from leakage or bursting of pipes, leaving open taps, &c.

Fig. 1 shows "the Preventer" in section, with the ball in two positions, one as when the supply of water has been drawn, and the ball thereby brought to the top of the tube, closing the service aperture, as at B; the other, when all is shut off, as at A.

Fig. 2 shows "the Preventer" with ferrule for connecting to the main pipe, as at A, and to the service supply pipe, as at B.

The Water Waste-Preventer consists of a tube of cast-iron, or other material, having flanges at each end, one to attach to the main supply pipe, the other to the service supply pipe: a ball of peculiar material and gravity is inserted in the tube. The tube when attached to the main supply pipe is laid at an elevation varying according to the pressure at which the water is supplied, the service end being the highest: if there is no leakage or draw upon the pipes, the ball will be, and remain at the bottom of the tube, as indicated on the drawing by the letter A; but when water is required to be drawn, and the tap is opened for that purpose, or should the pipe be burst, or water running to waste from any cause, the ball immediately and gradually ascends until the quantity of water the machine is intended to deliver has taken place, when the ball will have moved to the top of the tube (as at B), and closed the aperture of the service supply pipe, and the delivery will have ceased until the tap be closed, or the defects remedied, when the ball will return again to the bottom of the tube, and further deliveries in succession may be obtained.

### RAILWAY JOTTINGS.

On Wednesday in last week the directors of the South Wales line were conveyed over one line of rails on the Chepstow Bridge, the other portion of the bridge being in course of construction. The opening of this bridge will complete the line of communication by railway from London to Swansea. The bridge, as we have before said, is of novel construction, consisting of four spans, one of 300 feet and three of 100 feet each. The latter portion has been completed some time. The roadway is formed on wrought-iron girders, 8 feet in depth, and supported by cast-iron cylindrical piers sunk down to the hard rock about 48 feet below the bed of the river. The lower edge of the girders supporting the roadway of the bridge is 50 feet above high-water, and they extend 600 feet, or the whole length of the bridge from shore to shore. The other portion, which crosses the Wye by a span of 300 feet, is constructed in a peculiar way, partly on the suspension principle. A wrought-iron tube, 309 feet in length, and 9 feet in diameter, strengthened in the interior by iron discs 20 feet apart, is placed horizontally on two piers or standards 50 feet above the level of the railway. From each end of the tube chains are brought down obliquely on each side of the bridge to the continuous iron girders, so as to join them at points distant 100 feet from the base of the piers or standards upon which the ends of the tube rest. At these points vertical frames or trusses secure the roadway to the tube. To these are attached a series of wedges to tighten the chains and screws to the girders, adjust the equilibrium of the whole, and render the structure as rigid and inflexible as possible. Mr. Brunel, the engineer-in-chief; Capt. Simmons, R.E. the Government inspector; Mr. W. G. Owen, the resident engineer, and others, were present. In order to test the stability of the bridge, a train, consisting of ten heavily laden trucks, drawn by two locomotive engines, was driven slowly backwards and forwards over it. The weight of the train was about 200 tons, and the deflection produced by it on the centre of the 300 feet span appears not to have exceeded seven-sixteenths of an inch. It was calculated by Mr. Owen, the resident engineer, that the greatest moveable weight that could possibly be brought on the bridge at one time would be about one ton per foot run, or 300 tons over a bridge of that span. That load could only be produced by forming a train of locomotive engines. It was stated that this portion of the bridge was tested on the ground before it was erected in its present position, by loading it with nearly 1,000 tons, and that the deflection on that occasion did not exceed one inch and a half. The weight of the tube is 220 tons, and of the chains, plates, &c. 120 tons, together 340 tons, or 720 tons for the two lines of way, over a span of 300 feet. The ironwork of the other portion of the bridge weighed about 700 tons, making the total weight of iron used in this bridge of 600 feet in length, for a double line of railway, about 1,400 tons. The total cost of the bridge, including foundations, piers, tubes, &c. would be 65,000*l*. The cost of the two tubes, the girders, and the roadway complete, not including the cast-iron piers and foundations, would be 28,000*l*. which sum is included in the 65,000*l*. The tube and ironwork for the second line of rails will soon be ready. The public opening was to take place on 19th inst.—The *Penzance Gazette* says,—"Mr. Pearce, one of the directors of the West Cornwall Railway, has expressed his intention of proposing to the board, that reporters for the press of this country should have free tickets on the line to journeys specially in connection with the press. We are sure that our brethren of the fourth estate, not only in Cornwall, but we might even say throughout the kingdom, will join with us in regarding this liberal-minded offer as a most graceful and appropriate tribute to the important position which the press now holds in a social point of view. We believe such an offer is wholly unprecedented."—The main line of the Great Northern Railway was opened on Thursday in last week. This new line, says the *Leeds Intelligencer*, will shorten the distance to London 20 miles.—Mr. Bidder, civil engineer, has left Berlin for Flensburg, for the purpose of commencing the survey of the Flensburg Railway, on the part of the London house of Peto, to whom a concession for the construction of this line has been granted.—One of the longest tunnels in the world is now in a forward state of completion. It is situated in Hungary, and leads from the shores of the River Gran, not far from Zarnowitz, to the mines in the Schemnitzer Hills. It is about 10 English miles long, and is intended to answer the double purpose of a channel to drain off the water accumulating in the works, and of a railway to transport the ore from the mines to the river.—The bridge now in course of completion on the Buffalo and New York City Railway, where it crosses the Genesee River, near Portageville, when completed will be 230 feet high and 500 feet span. Stone piers, set on the rock, are carried up 30 feet high from the bed of the river, a few rods above the upper falls. From the top of the piers the woodwork rises 200 feet. Over 30 tons of iron will be consumed for bolts in the construction of this bridge. The timber from 160 acres has been purchased. It is calculated that 210 acres will afford timber enough to complete the bridge.

### LIVERPOOL AND MANCHESTER BUILDINGS.

A monthly review of architecture as a fine art is given in *The Critic*, founded, as the writer states, on the engravings given in our pages and those of other illustrated contemporaries. We quote a few paragraphs from the last part:—

"St. George's Hall, Liverpool, in scale, in general form, in the breadth of its great masses, and in its columnar magnificence, perhaps transcends all other recently erected Greco-Roman structures in Christendom. We may wish that the great crowning cube, which pronounces the noble altitude of the east hall, had been less box-like in its simplicity, and that the attic range of the tambour of Wren's great dome had been emulated, rather than the unrelieved solidity of the square cutter which crowns the Museum at Berlin. The rich assemblage of vertical lines, and the highly ornate character afforded by the Corinthian portico and lateral colonnades, makes one feel that the unbroken extent of plain horizontal surface in the conspicuous portion of the building just alluded to, is not in harmony with the rest. Even the intermediate parapet courses between the top of the colonnades and the terminating mass, might, with manifest advantage, have been also relieved by vertical divisions answering the outline of the columns. We are no friends to pseudo architecture; but in this case it would not, in sentiment, have been such; for the idea conveyed would have been nothing more than that of strengthening a long extent of masonry, by piers at intervals, instead of expending the required substance in continuous thickness.

Even with these objections, the best examples of Berlin and Munich are far more than rivalled by Elmes's great work, in which the pictorial is united in a singular degree with the severest elegance.

Not so happy an example is the Exchange at Manchester: we speak of its exterior, though the upper part of it suggests the improvement of the more defective parts of the great Liverpool building. It is otherwise most faulty; being, as it were, a Greek peripteral Doric temple, with the cell raised, and the side colonnade filled in with arches, which, having no imposts, look as if they would slip down to the stylobate. Nothing can be more discordant than the united aspect of the herculean portico and the delicate character of the turrets, windows, and other parts of the building. This is not a Greco-Roman structure, neutralised by modification, but an inharmonious combination of positive Greek and positive Italian. It is not like a beautiful green, but an offensive juxtaposition of bright blue and radiant yellow.